Relativity in Velocity Space

(1) Part V & Hasbay, Rhebeff & Non Euclidean Geometry - Re Return of the Non-Euclidean

(2) Minkowski Geometry (1908) but Newtonian spacetime under Galilean group as do N-E
Show slide 19

(3) In S.R. spatial geometry is Euclidean
— only that G-R do we come to N-E. spatial geometry (Ehrenfest (1909...)

5 mins

(4) Two Roles of Euclidean Geometry in classical Mechanics
a) physical space
b) velocity space.
Show slide (1)

(5) Transition to S.R. is to relativistic Geometry of velocity space.
Show slide (2), (3), (3a), (4)

(6) We can also discuss Geometry of the light-cone
— conformal Geometry → Spinors
Penrose age (1978) etc

15 min

(7) Yesterday Show slide (5)

20 min

(8) Conclusions: A Grand Theme with (i) Motions in hyperbolic geometry
(ii) Conformal transformations of 2-dimensional space
(iii) Bilinear transformations of complex plane
(iv) Projective transformations of 1-dimensional complex projective space.

25 min

(v) Isomorphism group of linear transformations of a complex 2-dimensional vector space

(vi) Subgroup of multiplicative group in quaternion algebra.

There are some of the deep insights into the Weyl group.

B Does N-F. Geometry of relativ- space challenge Kant -

Do we have to wait for N-E Geometry of physical Protean space to challenge Kant's views.

30 min